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Obituary: Fred S. Keller (1899–1996)

Fred S. Keller

Fred Simmons Keller was born on January 2, 1899, in the little village of Rural Grove, near the Mohawk River, in Montgomery County, New York. His early education was broken and uneven, punctuated by many changes in family residence; and he finally left high school to become a telegraph operator for the Western Union Telegraph Company, in Saranac Lake, New York. His interest in this occupation was first aroused by F. C. Merker, manager of the Company's office in Wellsville, New York, where he served as a messenger boy and began his study of the telegraphic code. In Merker, he found a kindly, understanding mentor, well remembered after many years.

In January 1918, he enlisted in the U.S. Army, at Fort Slocum, New York, served briefly in the field artillery at Camp Jackson, South Carolina, and went overseas as a member of an ammunition train, to take part in World War I. In France, his regiment was involved in five major engagements and was selected to go into Germany with the Army of Occupation. He was mustered out of service, with the rank of sergeant, in August 1919.

In September of the same year, he received an athletic scholarship at Goddard Seminary, in Barre, Vermont, where he played an undistinguished role in football, basketball, and track, wrote the words for the Class Song, was end-man in a minstrel show, and learned to dance the fox-trot during the Monday afternoon Social Hour. There was very little time for study.

At Tufts College, where Keller was admitted through certification in the autumn of 1920, he had a mediocre record except in English literature and philosophy, and left school without a degree because of deficiencies in chapel attendance and physical education. After a year's employment with the Andover Press, in Andover, Massachusetts, he returned to Tufts, with psychology as his major interest, and was graduated with the class of 1926. In the same year, he was married to Constance Ricketts, of Monson, Massachusetts, a marriage that ended with a divorce in 1931; he was admitted to Harvard for graduate study in psychology; and he was given a part-time teaching position at Tufts, which he held for a two-year period. Subsequently, he was a laboratory assistant and a tutor in Harvard College.

Keller received his Master's degree at Harvard in 1928, his PhD in 1931. He has described these Harvard years in a paper, *Psychology at Harvard—1926–1931,* written for B. F. Skinner's *Festschrift,* in 1970. His principal teacher at Harvard was Edwin G. Boring, then departmental chairman, but he was influenced more, in his research, by Walter S. Hunter, a visitor at Harvard from Clark University. His doctoral dissertation was concerned with the question of "symbolic processes" in the white rat, a problem derived from Hunter's famous studies with the temporal maze.

On leaving Harvard, in the Depression era, he was lucky to find a job at Colgate University, in Hamilton, New York, where he spent "seven lean years" as an instructor, without a raise in pay. In 1936, he married again, to Frances Scholl, of Utica, New York—a marriage that produced a daughter,

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Anne Simmons, in 1937, and a son, John Vanderveer, in 1941. Also in this period, he wrote a small book on psychological history and systems, *The Definition of Psychology,* which helped him to secure another instructorship, at Columbia University, where he remained for 26 years until his retirement in 1964.

Impressed by the work of B. F. Skinner, his friend and former classmate at Harvard, Keller was instrumental at Columbia in developing reinforcement theory, in connection with both teaching and research. With W. N. Schoenfeld, he introduced, in 1946, a new type of laboratory course in elementary psychology, in which students worked with white rats as experimental subjects. With Schoenfeld, too, he wrote an introductory textbook, *Principles of Psychology* (1950), which is said to have attracted numerous students to the study of behavior science.

During World War II, Keller combined his Morse-code experience with his knowledge of the learning process in a series of researches on radio-operator training, for which he received a Certificate of Merit from President Truman in 1948. The "code-voice" method that he and his co-workers developed became a standard teaching technique in the U.S. Army Signal Corps and other service branches. It represented an early application of the principle of reinforcement to practical human affairs and served as a model for the study of several other skills.

His work on Morse-code learning ended with a single-subject study of the American telegraphic code under conditions that aimed to test the validity of conclusions drawn by Bryan and Harter in their classic investigations of this skill. His presidential address to the Eastern Psychological Association in 1957, on *The Phantom Plateau,* constitutes a reappraisal of the old position and a reinterpretation based upon behavior theory.

Although he did his share of administrative work in the Psychology Department at Columbia, and although he was not entirely unproductive in research, Keller was primarily a teacher and a research catalyst. Among his pupils at both the graduate and undergraduate levels can be found many distinguished workers in the modern experimental analysis of behavior. He still derives great satisfaction from their achievements in basic and applied research, and counts himself extremely fortunate in the affection which they bear for him.

Near the end of his Columbia tenure, Keller accepted an invitation to the University of São Paulo as a visiting professor. With Fulbright-Hayes support, he spent the year of 1961 in Brazil, introducing reinforcement theory in that country and working with a few outstanding pupils in research on animal learning. As a result of this excursion, several Brazilian students came to study for advanced degrees in the United States, several American professors visited Brazil to further the work that Keller had begun, and one or two Brazilian teachers became the spearhead of a movement that continues to spread throughout that land today.

Another result of this Brazilian venture was realized when Keller was invited, in 1963, to help set up a Department of Psychology at the new University of Brasília, in the capital city, with *carta branca* guaranteed for every aspect of the project. The challenge was accepted and he returned to Brazil in 1964 to work, with three collaborators, on the project. From this emerged, as an important aspect of their program and one outcome of their freedom, a "personalized system of instruction," sometimes called the "Keller Plan," which is the subject of growing interest throughout the teaching world today.

Keller got back from Brazil and retired at Columbia in 1964, immediately after which he joined the faculty of Arizona State University, in order to develop the plan of teaching that had been started in Brasília and to extend his salaried years beyond the age of 68, when retirement at Columbia would be

mandatory. Within the next three years, he and his colleague, J. G. Sherman (a former associate at Columbia and collaborator in Brazil) refined the system of personalized instruction and prepared it for the scrutiny of their colleagues.

After he retired from Arizona State in 1967, Keller was a visitor at the Institute for Behavioral Research, in Silver Spring, Maryland, where he carried out two further studies of the teaching method and wrote his best-known paper on it—"Good-bye, teacher. . ." In 1968 he joined the Department of Psychology at Western Michigan University as a visiting professor and remained there as an adjunct professor until 1973. In the following year he joined the Center for Personalized Instruction at Georgetown University, remaining there as a consultant until 1976, when he retired and moved to Aiken, South Carolina, for four years. This was followed by a move to Chapel Hill, North Carolina, where he had a nominal relationship with the Psychology Department at the University of North Carolina until his death in 1996. In his later years, Keller maintained an active interest in the field of behavior analysis (a field that stemmed from the researches of his long-term friend, B. F. Skinner) and in the promotion of the teaching system that he helped develop.

In a long and productive academic lifetime, Keller was the author or coauthor of several books and 80-some articles in his field. He was the recipient of many awards in the United States and in Latin America, together with a number of honorary degrees, connected mainly with his teaching innovations.

Keller is survived by his wife, Frances Scholl; a daughter, Anne Cline, of Kalamazoo, Michigan; and a son, John Keller, of Charlotte, North Carolina.